

# Assessing Safety Performance

## Highway Safety Improvement Program

### 2019 Targets

#### Target Summary

Measure (5-year rolling average)	Baseline Condition (2013-2017)	2019 Targets (2015-2019)
Number of Fatalities	981.4	1,023.2
Rate of Fatalities per 100 million VMT	1.00	1.02
Number of Serious Injuries	5,355.0	5,406.8
Rate of Serious Injuries per 100 million VMT	5.47	5.41
Number of Non-motorized (Pedestrian and Bicycle) Fatalities and Serious Injuries	743.6	759.8

Vehicle Miles Traveled (VMT)

#### Performance Measure Description

Five performance measures were established for the purpose of carrying out the Highway Safety Improvement Program (HSIP), as noted in the Target Summary, and are based on a 5-year rolling average. The measures will be used to assess traffic fatalities and serious injuries on all public roads regardless of jurisdiction. The intent is to improve national safety data by providing greater consistency in reporting, improve transparency through use of a public reporting system, and enable targets and progress to be aggregated at the national level. The regulation will provide the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) the ability to better communicate a national safety performance story.

Establishing targets is a coordinated effort between the Michigan Department of Transportation (MDOT), the Michigan State Police Office of Highway Safety Planning (MSP-OHSP), and Michigan Metropolitan Planning Organizations (MPOs). Targets for three of the five measures must be reported to both FHWA and NHTSA, by MDOT and MSP-OHSP respectively, and must be identical. The three measures are: The number of fatalities, rate of fatalities per 100 million Vehicle Miles Traveled (VMT), and number of serious injuries.

MSP-OHSP annually reports the baseline and targets for the subsequent year to NHTSA by July 1 in the Highway Safety Program, thus significant effort must be made to reconcile crash data by May 1 to meet the deadline. The program focuses on reducing fatalities, injuries, and economic losses result from vehicle crashes through behavioral traffic safety programs. MDOT reports the baseline condition and targets to FHWA by August 31, 2018, as part of the HSIP report, and the MPOs have an additional 180 days to report their respective targets to MDOT. The HSIP focuses on reducing fatalities and injuries on all public roads through infrastructure programs and projects to improve safety.

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#### Methodology

##### *Existing Trend*

Each performance measure is based on a five-year rolling average. The calculation is the sum of the most recent five consecutive years ending in the year for which the targets are established, dividing by five, and rounding to the tenth decimal place for each measure. The data is obtained from either the Fatalities Analysis Reporting System (FARS) or the State of Michigan Crash Database. For each rate measure, first calculate the number of fatalities or serious injuries per 100 million VMT for the most recent five consecutive years, divide by five, and round to the tenth decimal place.

##### *External/Exogenous Factors and Risk Assessment*

The respective parties agreed to utilize two models developed and maintained by the University of Michigan Transportation Research Institute (UMTRI). The UMTRI models rely on results of a recently completed research report titled Identification of Factors Contributing to the Decline of Traffic Fatalities in the United States, which was completed as part of the National Cooperative Highway Research Program project 17-67. The models, predicting counts and the change in counts of fatalities, rely on the correlation between traffic crashes, vehicle miles traveled (VMT), and risk. UMTRI identified four factors that can influence the outcome: the economy, safety and capital expenditures, vehicle safety, and safety regulations. For both models, economic factors such as the Gross Domestic Product (GDP) per capita, median annual income, the unemployment rate among 16 to 24-year old's, and alcohol consumption had the greatest impact at approximately 85 percent.

#### Target Overview

To determine a forecasted value for the five-year rolling average for the first four measures listed above, the decision was made to use a model created by UMTRI that is similar to that used for establishing CY 2018 targets in 2017. The change model created by UMTRI predicts 1,029 fatalities in CY 2018, and 1,028 in 2019. While serious injuries have increased over the past two years, the linear relationship of the ratio of serious injuries and fatalities (A/K) is still evident. The model predicts 5,299 serious injuries in CY 2018, and 5,152 in 2019.

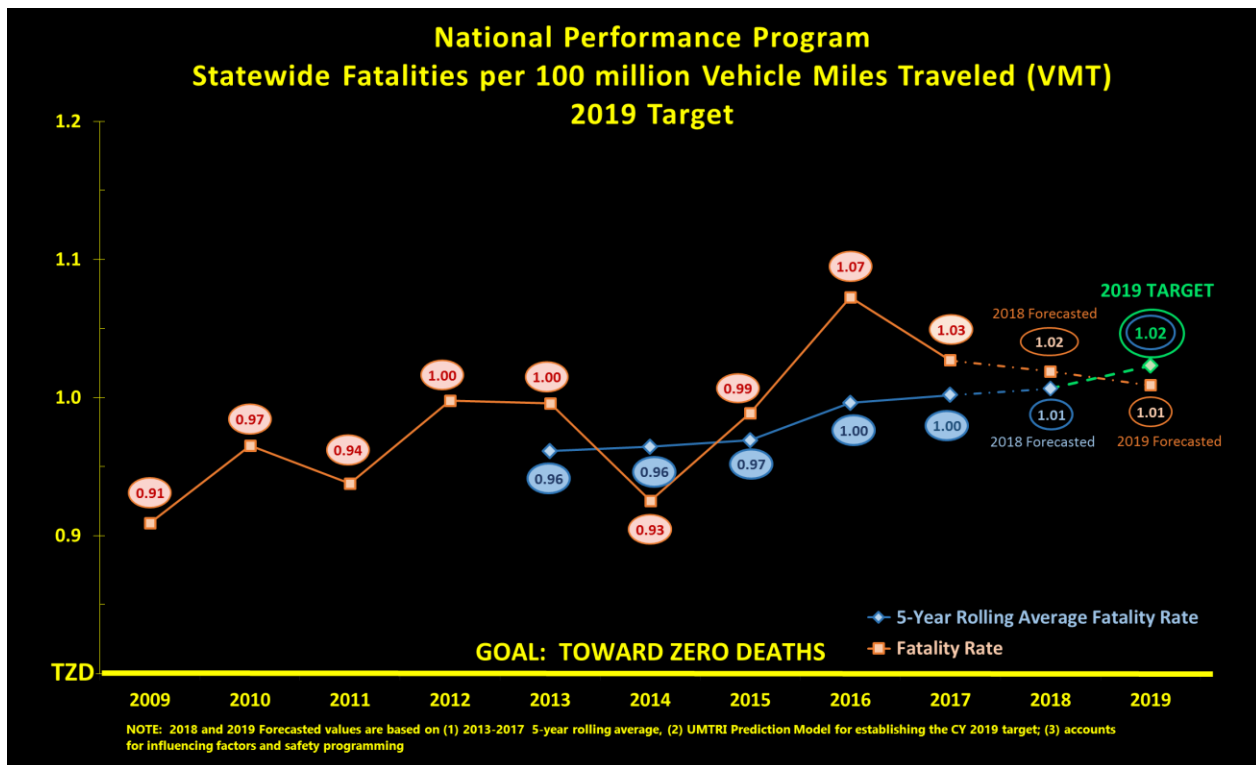
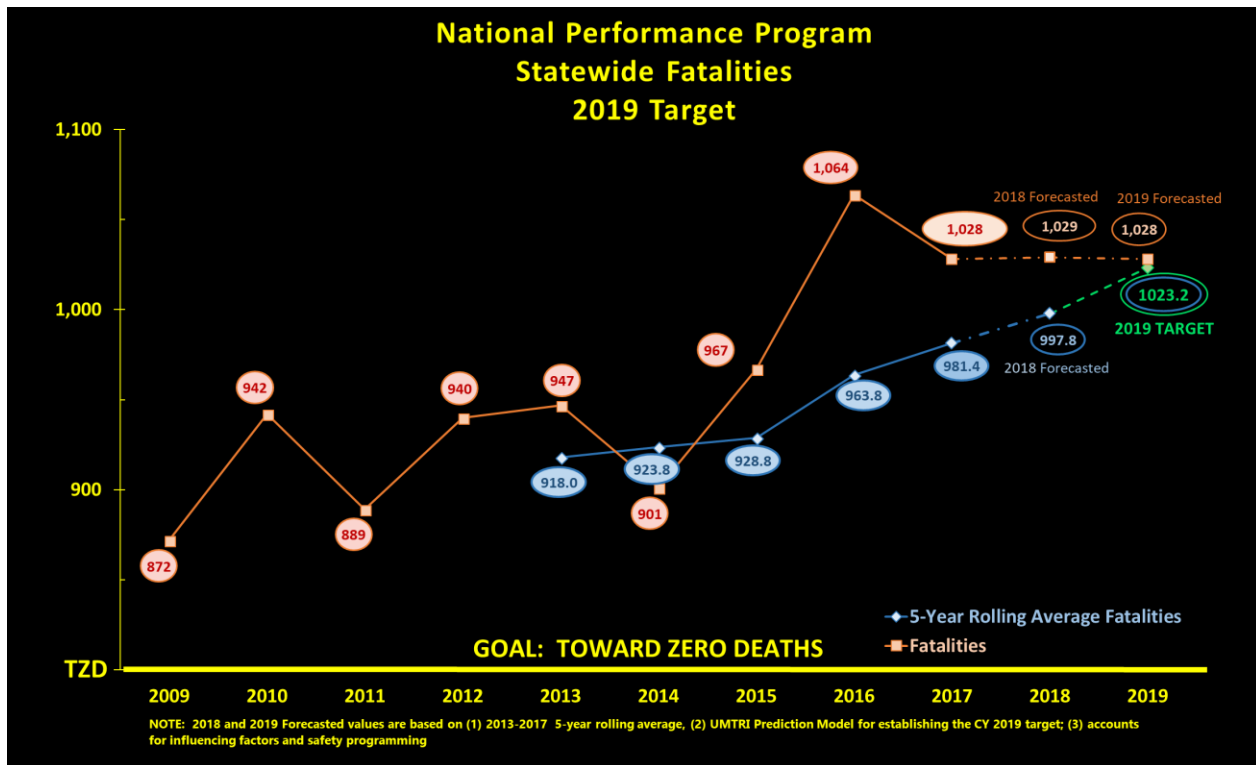
VMT values have been predicted for CYs 2017, 2018 and 2019. Using the fatal and serious injury values, along with the respective predicted VMT, the forecasted fatality rates are 1.02 for CY 2018, and 1.01 for CY 2019, and annual serious injury rates of 5.25 for CY 2018, and 5.06 for CY 2019. Results from the UMTRI model (the fatality and serious injury relationship) were also used to generate non-motorized forecasted annual values of 760 for CY 2018, and 751 for CY 2019.

The above annual values for CY 2018 and CY 2019 we used along with values from CY 2015 to 2017 to determine the 2019 Targets (five-year rolling average) as shown in the table.

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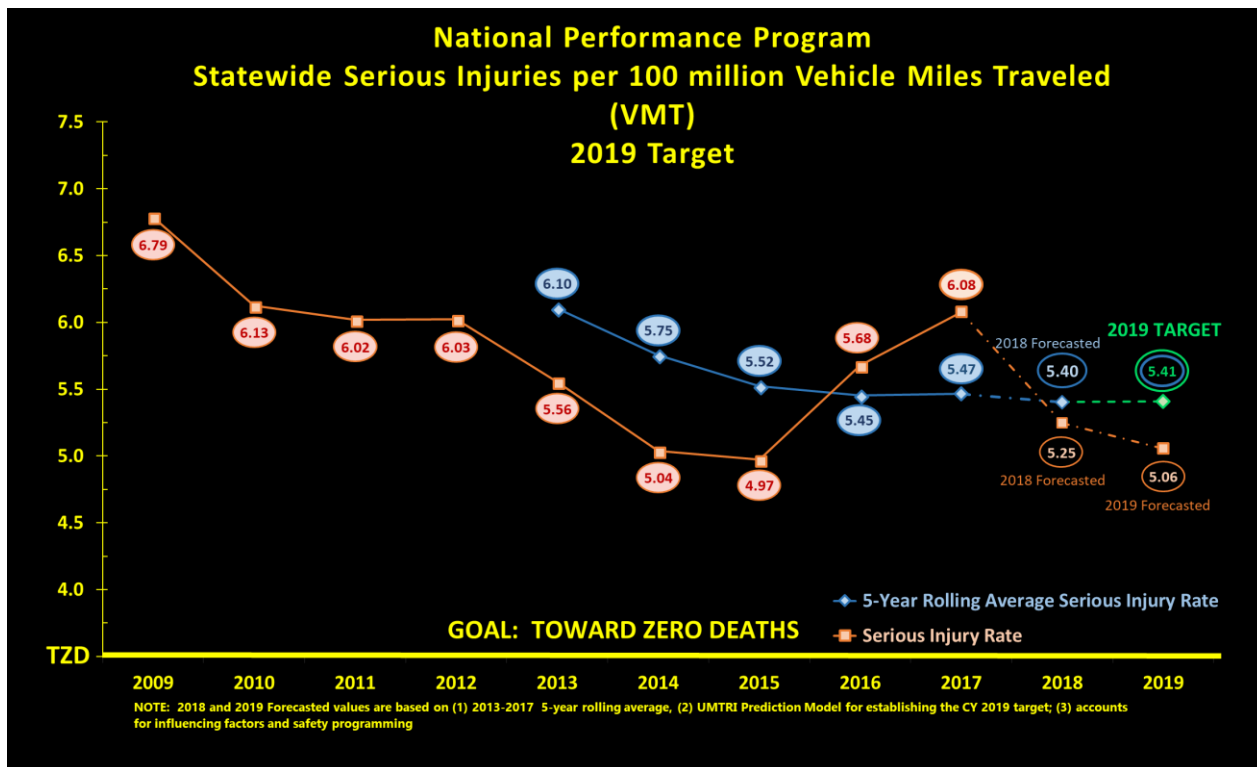
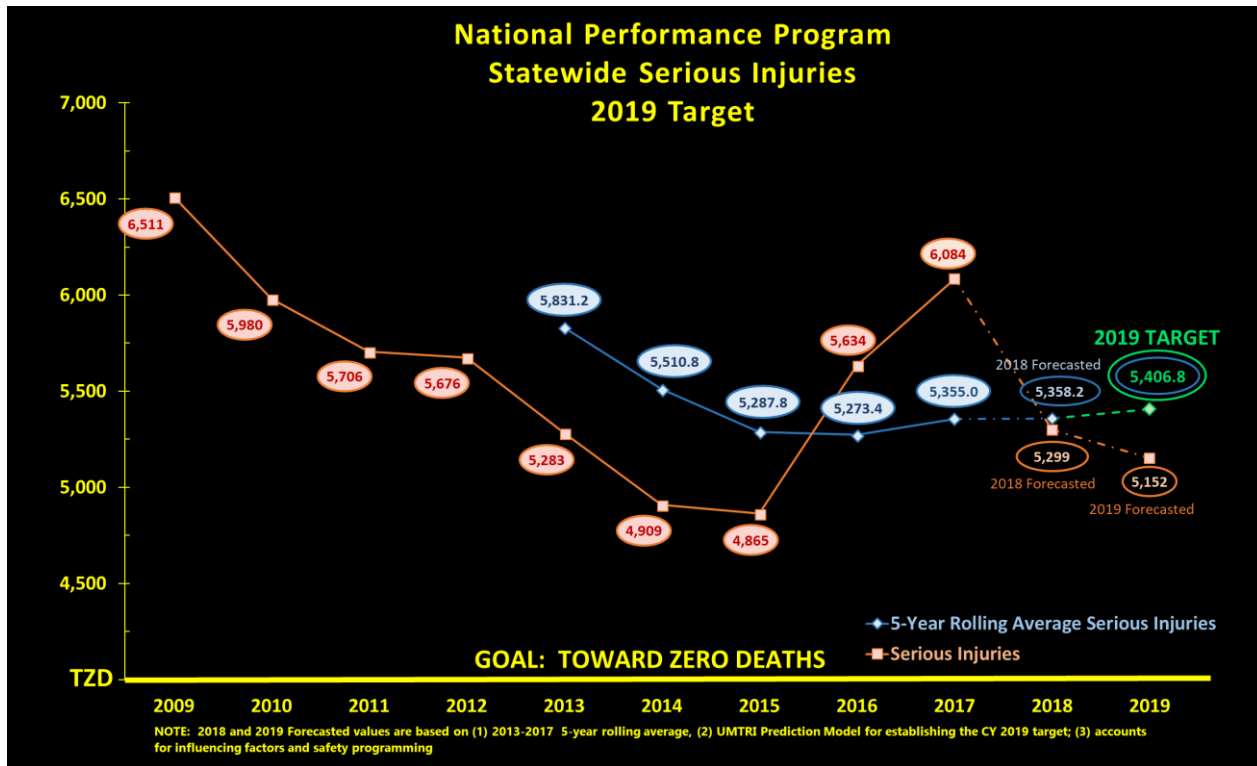
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